3.11 SHORELINES

3.11.1 Studies and Coordination

Jurisdictional shorelines are designated as such by Washington's Shoreline Management Act (SMA) (Chapter 90.58 RCW) and are incorporated into local zoning ordinances. The shoreline impacts evaluation was conducted on the basis of whether or not proposed transportation improvements entered the shoreland, defined as the 200-foot-wide area landward from a designated shoreline. This shoreland was extended where there were associated 100-year floodplains and wetlands. Since the specific location and design of improvements would be determined during future phases of the projects, only potential encroachments on the jurisdictional shoreland were identified.

Public access to shorelines and shoreline protection, enhancement, and preservation, are important goals of the local shoreline master programs. Consequently, improvements to trails, bikeways, and other public access features are considered as having beneficial impacts. Roadways, while allowable as a beneficial public purpose, would need to incorporate design features that address the stated goals and purposes of the local shoreline master programs. The analysis assumes that when necessary, shoreline protection and preservation, public access, and habitat enhancement can be maintained or improved as part of project development.

In addition to review of maps and local zoning (sensitive areas) ordinances in study area jurisdictions, shoreline regulations and master programs were examined in order to gain an understanding of the local management of wetlands, floodplains, and jurisdictional shorelines. Local officials were also contacted in several instances.

3.11.2 Methodology

To analyze shoreline impacts of the I-405 Corridor Program, the adopted shoreline master programs for King County, Snohomish County, and the cities of Tukwila, Kent, Renton, Newcastle, Bellevue, Kirkland, Redmond, Woodinville, Bothell, and Kenmore were reviewed, and jurisdictional shorelines were mapped. Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps for King and Snohomish counties were examined to identify the associated floodways and the 100-year floodplains associated with jurisdictional streams and lakes within the study area. Critical area maps and the National Wetlands Inventory maps were also reviewed, where available, to identify potential wetland areas that could also be associated with jurisdictional shorelines. Study area floodplains and stream basins were overlaid on alternative maps. Finally, the floodplains, wetlands, and streams that were not associated with jurisdictional shorelines were removed from the maps. Locations where proposed transportation improvements, jurisdictional shorelines, associated wetlands, and the 100-year floodplain intersected were then evaluated using available information and USGS 7.5-minute topographic maps so that impacts could be qualitatively estimated.

Since revisions to some of the FEMA maps have been made since the King County database was developed, maps that were revised since 1995 were inspected to see if changes in the 100-year floodplain had been made in the study area. The most recent maps (November 8, 1999) were included in the review, and the maps showing impacts were modified accordingly.

The boundaries of floodways were assumed to represent the ordinary high water mark (OHWM) and the outer boundary of the 100-year flood plain was assumed to include all associated wetlands. For estimation of impacts, the jurisdictional shoreline boundary was considered to be 200 feet from the floodway boundary and the edge of the 100-year floodplain when it extends beyond 200 feet from the floodway boundary. The I-405 improvements that could be subject to SMA regulations are summarized by jurisdiction and alternatives in Table 3.11-1.

The analyses in this section are based on the *I-405 Corridor Program Draft Shorelines Expertise Report* (DEA, 2001), herein incorporated by reference.

3.11.3 Affected Environment

Jurisdictional shorelines within the study area are shown on Figure 3.11-1. The designated shorelines and the shoreline environment designations (in parentheses) within the study area are as follows:

King County: Lake Washington (Urban, Rural and Conservancy), Lake Sammamish (Urban and Rural), Sammamish River (Urban and Rural), Green River (Urban and Rural) Lake Desire (Rural and Conservancy), Spring Lake (Rural and Conservancy), Shadow Lake (Rural and Conservancy), Panther Lake (Rural and Conservancy), and Lake Youngs (Urban-Lake Residential).

Tukwila: Green/Duwamish River (Manufacturing/Industrial Center and Urban-Open Space).

Kent: Green River (Urban-River Resource) and Big Soos Creek (Urban-Stream Corridor).

Renton: Springbrook Creek (Conservancy and Urban – the shoreline area has a special map further defining the jurisdictional shorelands that include associated wetlands and floodplains), Black River (Conservancy), Cedar River (Conservancy and Urban), May Creek (Conservancy and Urban), and Lake Washington (Urban).

Bellevue: Bellevue has adopted a Shoreline Overlay District (no specific environment designations) for the following shorelines: Lake Washington, Mercer Slough, Phantom Lake, Lake Sammamish, and Lower Kelsey Creek.

Kirkland: Lake Washington (Suburban Residential, Urban Residential 1, Urban Residential 2, Urban Mixed 1, Urban Mixed 2, Conservancy Environment 1, and Conservancy Environment 2). There were no improvements listed that would require a shoreline permit from the City of Kirkland.

Redmond: Lake Sammamish (Urban, Conservancy, and Natural), Sammamish River (Urban and Rural), Evans Creek (Urban and Conservancy), and Bear Creek (Urban and Conservancy).

Woodinville: Sammamish River (Urban and Conservancy) and Little Bear Creek (Urban and Conservancy).

Bothell: Sammamish River (Urban, Rural, and Conservancy), and North Creek (Urban).

Kenmore: Lake Washington (Urban and Conservancy), Swamp Creek (Urban and Rural), and Sammamish River (Urban and Rural).

Snohomish County: Swamp Creek (Suburban) and North Creek (Urban).

NOTE: Newcastle: There are no designated shorelines of the state or statewide significance within the city limits.

Legend: Jurisdictional Shorelines

- Jurisdictional Shorelines
- Study Area Boundary
- County Boundaries
- Highways
- Roadways
- Railways

N

1 0 1 2 3 Miles

SNOHOMISH

KING

Mill Creek
Lynnwood
Edmonds
Woodway
Mountlake Terrace
Brier
Bothell
Kenmore
Shoreline
Lake Forest Park
Woodinville
Cottage Lake
Duvall
Kirkland
Redmond
Lake Washington
Union Bay
Lake Union
Narrow Point
Hunts Point
Clyde Hill
Medina
NE 8th St
Bellevue
Phantom Lake
Sammamish
Lake Sammamish
Seattle
Beaux Arts
Mercer Island
Duwamish River
Newcastle
May Creek
Coal Creek Pky SE
Issaquah
Tukwila
SE 128th St
Renton
Springbrook Creek
Burien
Normandy Park
SeaTac
SE Petrovitsky Rd
Lake Desire
Spring Lake
Panther Lake
Lake Youngs
Shady Lake
Shadow Lake
68th Ave
132nd Ave SE
Kent
Des Moines
Covington
Maple Valley
Auburn
Federal Way
Strondns Rd NE
NE 128th St
148th Ave SE
Redmond Fall City Rd

Jurisdictional Shorelines within the Study Area

Figure No. 3.11-1

This page left intentionally blank.

Table 3.11-1: Number of Improvements Potentially Subject to Shoreline Management Act Regulatory Requirements in the Study Area

Jurisdiction	No Action Alternative	Alternative 1 High-Capacity Transit/TDM Emphasis	Alternative 2 Transit Emphasis	Alternative 3 Mixed Mode Emphasis	Alternative 4 General Capacity Emphasis	Preferred Alternative
King County	1	3	6	7	11	7
Snohomish County	1	1	2	3	5	3
Tukwila	0	3	5	7	5	7
Woodinville	4	4	8	10	11	11
Renton	2	16	19	18	17	17
Bellevue	0	6	9	7	6	7
Kirkland	0	3	4	3	4	3
Redmond	3	6	9	9	8	8
Kenmore	0	2	2	2	2	1
Kent	0	0	0	0	0	0
Bothell	2	10	16	17	20	20
Total of Projects	13	47	67	65	67	72

Note: Appendix N provides a cross reference for improvements (elements) numbers and locations. Improvements affecting multiple jurisdictions were only counted once.

Transportation improvement may be permitted either through a Shoreline Substantial Development Permit or a Shoreline Conditional Use Permit. Compliance with the regulatory framework of each jurisdiction requires avoidance, minimization, and mitigation of all the impacts to the shoreline environment. In many circumstances, increased public access opportunities are a regulatory requirement. There is only one shoreline area within the study area designated Natural. This area is at the north end of Lake Sammamish within Marymoor Park. There are no proposed improvements within this area.

3.11.4 Impacts

Proposed transportation improvements are expected to be designed so that impacts to shorelines are avoided, and minimized when avoidance is not an option.

3.11.4.1 No Action Alternative

The No Action Alternative includes 13 improvements that would affect six jurisdictional shorelines. Park-and-ride lots that are not yet sited are not analyzed here.

Construction Impacts

No substantial impacts to shorelands are anticipated during construction. Avoidance of the shoreline environment (if possible) would be investigated during project design. Potential construction impacts to the shoreline environment include filling, armoring, and disrupting existing public access points. The filling and armoring could result in a loss of near-shore environment that is important to juvenile salmonids making their way from a riverine

environment to an estuarine environment. Impacts to the near-shore environment are discussed in Section 3.8, Fish and Aquatic Habitat. Filling and armoring within the shoreline environment also may result in a loss of the floodways' and floodplains' capacity to pass floodwaters. Within areas that have already been urbanized or disrupted by prior construction activities, in many instances filling and armoring of the shoreline banks may have already occurred. Impacts from improvements that may require increased filling or armoring may not be as substantial an impact (due to previous losses) when compared to impacts on non-disturbed shorelines. Meeting the regulatory requirements for shorelines would result in other impacts being avoided, minimized, or mitigated. These issues are addressed in Sections 3.5 (Water Resources), 3.6 (Wetlands), 3.8 (Fish, Aquatic Habitat, and Threatened and Endangered Fish Species), and 3.10 (Floodplains), and are not addressed in detail here.

Construction activities may cause temporary disruption at public shoreline access points, such as the Sammamish River Trail. This impact would only occur during construction. Detours around the construction activity can provide continued access, and improvements for public access may result as part of the construction project.

Operational Impacts

Operation of the proposed transportation improvements should not result in substantial adverse environmental impacts to jurisdictional shorelines. However, without the avoidance and mitigation measures discussed at the conclusion of this section, public access and habitat could be adversely affected.

3.11.4.2 Alternative 1: HCT/TDM Emphasis

Forty-seven of the Alternative 1 improvements would affect jurisdictional shorelines. Ten different jurisdictional shorelines would be either crossed or entered by these improvements.

Construction Impacts

Construction impacts are similar to those discussed for the No Action Alternative. Table 3.11-1 shows the number of improvements within each alternative that may impact jurisdictional shorelines. Assessment of any potential filling or loss of shoreline habitat will be examined at the project-level environmental analysis, documentation, and review.

Operational Impacts

Operation of the proposed transportation improvements should not result in substantial adverse environmental impacts to jurisdictional shorelines. However, without the avoidance and mitigation measures discussed at the conclusion of this section, public access and habitat could be adversely affected through alteration or removal. Avoidance measures can be incorporated into project design.

3.11.4.3 Alternative 2: Mixed Mode with HCT/Transit Emphasis

Sixty-seven of the Alternative 2 improvements would affect jurisdictional shorelines. Ten different jurisdictional shorelines would be either crossed or entered by these improvements.

Construction Impacts

Construction impacts are similar to those discussed for the No Action Alternative. Table 3.11-1 shows the number of improvements within each alternative that may impact jurisdictional

shorelines. Assessment of any potential filling or loss of shoreline habitat will be examined at the project-level environmental analysis, documentation, and review.

Operational Impacts

Operation of the proposed transportation improvements should not result in substantial adverse environmental impacts to jurisdictional shorelines. However, without the avoidance and mitigation measures discussed at the conclusion of this section, public access and habitat could be adversely affected through alteration or removal. Avoidance measures can readily be incorporated into project design.

3.11.4.4 Alternative 3: Mixed Mode Emphasis

Sixty-five of the Alternative 3 improvements would affect jurisdictional shorelines. Ten different jurisdictional shorelines would be either crossed or entered by these improvements.

Construction Impacts

Construction impacts are similar to the No Action Alternative. Table 3.11-1 shows the number of improvements within each alternative that may impact jurisdictional shorelines. Assessment of any potential filling or loss of shoreline habitat will be examined at the project-level environmental analysis, documentation, and review.

Operational Impacts

Operation of the proposed transportation improvements should not result in substantial adverse environmental impacts to jurisdictional shorelines. However, without the avoidance and mitigation measures discussed at the conclusion of this section, public access and habitat could be adversely affected through alteration or removal. Avoidance measures can readily be incorporated into project design.

3.11.4.5 Alternative 4: General Capacity Emphasis

Sixty-seven of the Alternative 4 improvements would affect jurisdictional shorelines. Ten different jurisdictional shorelines would be either crossed or entered by these improvements.

Construction Impacts

Construction impacts are similar to the No Action Alternative. Table 3.11-1 shows the number of improvements within each alternative that may impact jurisdictional shorelines. Assessment of any potential filling or loss of shoreline habitat will be examined at the project-level environmental analysis, documentation, and review.

Operational Impacts

Operation of the proposed transportation improvements should not result in substantial adverse environmental impacts to jurisdictional shorelines. However, without the avoidance and mitigation measures discussed at the introduction to this section, public access and habitat could be adversely affected through alteration or removal. Avoidance measures can readily be incorporated into the project design.

3.11.4.6 Preferred Alternative

Seventy-two of the improvements contained in the Preferred Alternative would affect jurisdictional shorelines. Ten different jurisdictional shorelines would be either crossed or entered by these improvements.

Construction Impacts

Construction impacts would be similar to the No Action Alternative. Table 3.11-1 shows the number of improvements within each alternative that may impact jurisdictional shorelines. Assessment of any potential filling or loss of shoreline habitat will be examined at the project-level environmental analysis, documentation, and review.

Operational Impacts

Operation of the proposed transportation improvements should not result in substantial adverse environmental impacts to jurisdictional shorelines. However, without the avoidance and mitigation measures discussed at the conclusion of this section, public access and habitat could be adversely affected through alteration or removal. Avoidance measures can readily be incorporated into project design.

3.11.5 Mitigation Measures

Specific mitigation will be determined after individual project technical and environmental analysis, documentation, and review is completed. All jurisdictional regulations for shorelines will be complied with on a project-level basis. The following types of mitigation and avoidance measures will be incorporated into individual project planning and design as appropriate and practicable:

- Alignment of roadways to keep improvements out of the shoreline.
- Minimizing right-of-way property acquisition within the shoreline by narrowing roadway shoulders.
- Incorporating new public access, shoreline protection and preservation measures, and habitat enhancement to the shoreline (on arterial improvements) into design when mitigation measures are necessary to address substantial adverse environmental impacts from the project.
- Replacing culverts to aid in fish passage.
- Where appropriate (based on project design and project-level environmental analysis, documentation, and review), elevating HCT to allow safe access to shoreline homes and parks that are only accessible by uncontrolled, at-grade rail crossings.
- Including pedestrian and bicycle underpasses in design so that access along shorelines is maintained.
- Including shoreline protection, preservation, and habitat enhancements in project design.
- Modifying existing projects so that shoreline protection and preservation as well as public access along shorelines are improved.

Using aesthetic treatments and barriers to buffer the shoreline from visual and noise effects.